

MAY, 1958



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WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK1WI: Sundays, 1100 hours EST, 7146 Kc.: 1930 hours EST, 144 Mc. No frequency checks available from VK3WI. Intra-state working frequency, 7050 Kc.

VK3WI: Sundays, 1130 hours EST, simultaneously on 3572 and 7146 Kc., 875 and 145.25 Mc. Intra-state working frequency 7135 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

VK4WI: Sundays, 0900 hours EST, simultaneously on 3580 and 1452 Kc. W.I.A. Country Hook Sunday mornings 0900 hours. Please call VK4ZM on 30 mhz, and VK3WI on 40 mhz. Sunday night re-broadcast of the news on 80 mhz at 2100 hours, conducted by VK4WI.

VK5WI: Sundays, 1000 hours EAST, on 7146 Kc. Frequency checks are given by VK3WI and VK3WI by arrangements on all bands to 50 Mc.

VK6WI: Sundays, 0930 hours WEST, on 7146 Kc. No frequency checks available.

VK7WI: Sundays at 1000 hours EST, on 7146 Kc. and 2672 Kc. No frequency checks are available.

VK9WI: Sundays, 1000 hours EST, simultaneously on 3.5, 7, 14 and 144 Mc. bands. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

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EDITORIAL



"... to Elect a Committee and Appoint a Chairman"

The average Ham, long before he gets his licence, realises that Amateur Radio occupies narrow strips of territory sandwiched between covetous neighbours, and from an instinct for self-preservation, if for no other reason, he joins the W.I.A. Unity, he feels, is strength, and every one more member means added strength and added assurance of the quiet enjoyment of his hobby.

It is likely, however, that few Hams ever get to know every detail of the internal operation of the Institute. Overall policy, for instance, is determined by Federal Council. Federal Executive is its operational instrument and through Federal Executive it maintains contact with the Authorities and with Amateur bodies throughout the world.

Within this framework of course each Division has an independent organisation of member Hams. And within these Divisions are the Zones,

carrying on in varying degrees of activity, functions of their own.

Besides this there is the Federal QSL Bureau, the Federal Contest Committee, the Civil Emergency Net, the Satellite Reporting Organisation and the Federal Traffic Net. There is a Committee for publishing your journal and the Australian Call Book. There are within the Divisions organisations for conducting the Sunday morning news broadcasts, producing Divisional newsletters, transmitting slow morse for learners, and producing fox hunts, transmitter hunts, scrambles, and social functions.

It is unlikely that any other field of spare-time activity so vially stimulates the British impulse to elect a Committee into an extremely happy family, but simultaneously trains a large body of first-class technicians, whose value to their community cannot easily be calculated.

FEDERAL EXECUTIVE

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Tests with Multiband Components and the VK2AOU Triband Beam

BY H. F. RUCKERT,* VK2AOU

LISTENING on the DX bands shows that the triband beam aeriels are by far the most popular and very successfully used arrays. But it is also noticed that there is a lot of argument as to the actual function of these beams and several unanswered problems seem to remain after listening to an account from those who have not achieved the expected results with their home-made beam.

We will, therefore, describe simple tests everyone can copy with a calibrated grid dip oscillator (g.d.o.) and a few pieces of wire and cable. The tests show quite clearly the properties of the beam components and how the functions can be combined to achieve triband operation. These tests will also demonstrate how Amateurs can do developmental work with their limited facilities.

The second part of the paper brings the description of a triband beam the writer used with very satisfactory results during the previous year. Most of the tests can also be made indoors where it is far more convenient. It does not matter if we get a small error due to the increased capacity of the dipole to the walls, etc. We are also aware of the fact that especially at v.h.f. the diameter of the dipole conductor has some effect on the resonance frequency.

Despite all this, and the not-too-great accuracy of the g.d.o. calibration, the results will be clear enough to show the principles involved, and that is the main purpose of the experiments and this paper.

The wavelength, being measured in cm. or m., will therefore require use of the following system to describe the tests:

- 1 cm. = 0.3937 inch
- 1 m. = 39.37 inches
- 1 m. = 3.281 feet

DIPOLE RESONANCES

1st Test

A piece of wire 7 m. long is erected, insulated at both ends and at least three feet away from walls or other objects. In the middle we bend the wire to a small loop to facilitate the coupling of the g.d.o. coil to this dipole.

The resonance indicated by the g.d.o. will be near 19.5 Mc., 60 Mc. and 100 Mc., etc., if our g.d.o. goes high enough in frequency. This means that a dipole has, besides its fundamental resonance, a resonance at the third and fifth (etc.) higher odd harmonics. This is quite logical if we plot the current distribution along the dipole as this is shown in Fig. 1. We get in principle the same result if we use a shorter dipole which may have its fundamental at 50 Mc. We will now find the next higher resonance at 150 Mc.

2nd Test

Several types of minibeams use inductive-loaded dipoles, for example an inductor in the middle. We now place in the middle of the 7 m. long dipole a coil with about 5 μ H. (13 turns, 4.3 cm. diameter, 4.5 cm. length). The g.d.o. is now showing resonance near 14 Mc., 42 Mc. and 70 Mc., etc., again at odd higher harmonics.

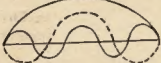


FIG 1 7m long dipole. Fund. 3rd 5th harmon.
Res. nt: 19.5, 60, 100 Mc. etc.

If we repeat this test at v.h.f. we can use a 1.9 m. long dipole which has a resonance near 75 Mc., insert a small coil in the middle to get the fundamental resonance at 48 Mc. The next higher resonance will now again be at about 3 x 48 Mc. We see that a small loading inductance does not disturb the fundamental law: that a dipole has only odd harmonics.

STUB RESONANCES

3rd Test

Less well known is the fact that a stub behaves very much like a dipole as far as the resonances are concerned. A closed stub is actually equal to a folded-up dipole. We take a 2.2 m. long piece of 300 ohm twin lead and put it up, insulated, as we did with the dipole. At one end a small loop closes the stub. It is important to hold the g.d.o. near this loop at the end of the closed stub to get the resonances we are interested in. We should now measure the fundamental at about 29 Mc., and 10.3 m. is the corresponding wavelength. The stub is an electrical quarter wave long.

By comparing the geometrical and the electrical length we get the velocity factor of the cable, $4 \times 2.2 + 10.3 = 0.83 = 83\%$, which is not too far from the true value of 81%. The harmonics indicated by the g.d.o. are the third at 86 Mc. and fifth near 145 Mc.

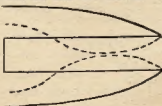


FIG. 2. Closed 4/4 stub. Fund. 3rd 5th harmon.
Res. nt: 29, 86, 145 Mc. etc.

This or similar tests with 70 ohm twin lead or co-axial cable will always have the same principle results, namely that besides the fundamental, only odd harmonics are present. With a 9 m. long stub of 300 ohm ribbon, all odd harmonics up to the 13th can be found between 7 and 91 Mc.

If we hold the g.d.o. near the centre of an open or closed stub we will also find resonance but these are different and not interesting with regard to our present problem. Fig. 2. We cannot, therefore, measure open stubs by coupling inductively the g.d.o. to the cable. But it is the usual practice to close the stub at one end and measure the resonances, which are identical to those of an open stub formed by the same cable.

4th Test

We have seen that a dipole is detuned when a reactance coil is placed in the centre, that a closed stub looks similar to a folded-up dipole, and that both have resonances at odd harmonics. It is, therefore, interesting to find out what resonances an open or closed stub will have if at one end an inductance or a capacitance is connected.

We use again the 2.2 m. long open stub made of 300 ohm ribbon. A small coil (7 turns, 4 cm. diameter, 2 cm. long) is connected to the open stub at one end. We will now find very different resonances (compare 3rd test) at 19.7 Mc., 40.5 Mc., 62 Mc., 113 Mc., 170 Mc., etc. The frequencies are by accident nearly now at even harmonics.

Changing the coil shows that we can shift the resonances over a wide frequency range by connecting a reactance across an open stub.

5th Test

The coil is now replaced by a 47 pF. capacitor and again different resonances are found, now near 35.5 Mc., 86 Mc., 140 Mc., etc. Using stubs of various length and of different cable (co-axial for example) will always have principally similar results.

6th Test

Repeating the tests with the same coil, or the capacitor, but closing the other stub end had the following different results: With coil—37.5 Mc., 88 Mc., 140 Mc. etc.; with capacitor—13.8 Mc., 58 Mc., 112 Mc., etc.

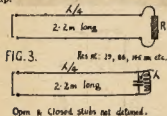
We know that an open stub is often compared with a series tuned circuit, and a closed stub with a parallel tuned circuit. We have now seen that both types of stubs are detuned by connecting reactances to them, as is so well known from both types of tuned circuits with lumped LC components.

It is therefore useless to tune a stub on its own at first and expect to maintain the resonances when this stub is connected to reactances like LC or dipole elements. We know that tuned

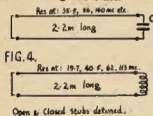
* 25 Berrille Road, Beverly Hills, N.S.W.

circuits are not detuned if a resistive component only is connected to them; only damping takes place.

The other case is when two tuned circuits with identical resonances and identical or different L/C ratios are connected in parallel, here again no detuning takes place (Fig. 3 and Fig. 4). This should be remembered if we wish to use a series tuned circuit or open stub as wave trap. They should be connected to a matched feeder, for example, which will not detune the trap.



We know that closed quarter-wave stubs are widely used as tanks of v.h.f. transmitters for example, and that the capacitive loading (valve, trimmer or tuning capacitor) is often reducing the stub to a small loop which is no longer regarded as a stub but as an inductor only. It may therefore be expected that a quarter-wave open stub connected to an inductor may in some way act like a capacitor and no longer as a wave trap. We get the well known combined effects of dipole, tuned feeder and aerial coupler, and we may therefore expect similar tuning effects and complex combinations if we use dipoles, inductive loading and stubs.



LOADED DIPOLES WITH STUBS OR L-C CIRCUITS

7th Test

We use the 7 m. long dipole. The resonances, before the loading coil is placed in the centre, are: 19.5 Mc., 60 Mc. and 100 Mc. We are not interested in harmonics of higher order at this stage. The 5 μH. coil, as already described (test 2), now changes the resonances to 14 Mc., 42 Mc. and 70 Mc. We now connect various lengths of 300 ohm twin lead parallel to the loading coil. In each case the capacity of the open stub is measured, which can be done with the help of the g.d.o., a suitable coil and a calibrated air capacitor. After closing one end of the stub we also determine with the g.d.o. the lowest resonance frequency of the stub. Fig. 5 shows the interesting result of this test.

The accuracy of the various measurements is good enough to see the principle effects of the combined components. The 5th harmonic disappears as

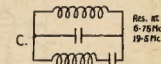
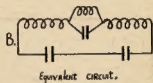
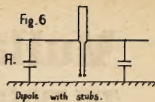
soon as a sufficiently large capacity replaces the open stub. This is important, because we see the L-C dipole has less resonances at higher and usually not wanted frequencies.

The most interesting fact is that over a wide range the open stub can be replaced by a capacitor of identical capacitance, as was expected (8th test). At about 2.4 m. stub length or at 40 pF. the resonance curves show a sudden jump near 10 Mc. and 20 Mc. 40 pF. together with the coil produces a lower resonance frequency, which is too low for the dipole length, and near about quarter-wavelength (geometrical dipole length), and the lowest resonance disappears. The stub dipole has a similar critical point at the second resonance. For the application discussed here, we do not have to investigate these critical points, because dipoles longer than quarter-wavelength are usually used to get satisfactory efficiency.

We see that the open stub, used to tune a dipole to a certain frequency, can be replaced by a lumped capacitance. The open stub is not a wave trap or aerial switch. It may also be mentioned that the coil could be replaced by an inductor of any other kind like closed stub, twin boom with shortening bar, or co-axial closed stub.

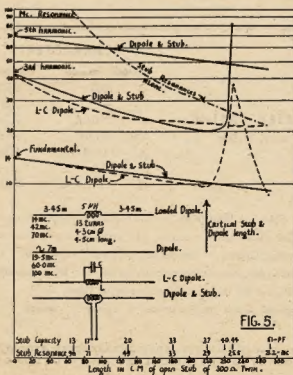
8th Test

It can be demonstrated and it is generally accepted that an aerial is an open tuned circuit with distributed L and C. Fig. 6 shows the dipole with the capacity to ground and the capacity between dipole halves. We see also an equivalent circuit of the dipole with the parallel tuned circuit con-

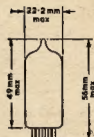


Two-band tank. (multiband.)
A, B & C. three similar arrangements.

nected to it. The closed stub is replaced by a coil and the open stub is shown as a capacitor. Finally, we see at the right the combination of the series tuned circuit (dipole) and the parallel tuned circuit (open and closed stub), which is nothing but the well known tank.



6BL8
TRIODE
PENTODE



Triode Section		Pentode Section
V_a	100V	250V
V_{g_2}	—	200V
I_a	14.0mA	7.0mA
V_g	— 2.0V	— 3.2V
g_m	5.0mA/V	5.5mA/V
μ	20	$g_1 - g_2 \times 47$
r_p	4.0 Kohms	900 Kohms



TECHNICAL SERVICE DEPARTMENT

1452

Additional data is available to design engineers on request.

Amateur Radio, May, 1958

Many of us use multiband tanks in transmitters and we know that they always have two resonances at the same time. The following test will convince us: The parallel tuned circuit consists of a 25 pF. capacitor and a coil (24 turns, 3.5 cm. diameter, 6 cm. in length). The series tuned circuit is formed by a 25 pF. capacitor and a smaller coil (15 turns, 3.5 cm. diameter, 3.5 cm. length). The g.d.o. will measure resonances near 6.75 Mc. and 19.5 Mc. It is well known that with variable capacitors of 120 pF. resonances from 3 to 30 Mc. can easily be achieved if suitable coil sizes are chosen. The same should be true for a dipole with a parallel tuned circuit in the middle. This is therefore the way to construct an aerial which can be used on two Amateur bands like 14 and 21 Mc. for example.

9th Test

A few v.h.f. tests are also very instructive. We use a dipole of 2 m. length which has a self resonance of about 75 Mc. We place a small coil in the middle of the dipole so that now the lowest resonance frequency lies at 50 Mc. and the next harmonic will be found near 150 Mc. A 58 cm. length of 70 ohm twin lead gets closed on one end, and the g.d.o. will measure a resonance at 75 Mc. for this electric quarter-wavelength of cable, which will now be used as open stub (removing the short at one end).

Some inventors claim that a stub parallel to the inductor will cause the dipole to have now 50 Mc. and 75 Mc. resonances. From the foregoing tests we know that we can expect very different results, and we are not surprised to find resonances near 36 and 108 Mc. (Fig. 7.)

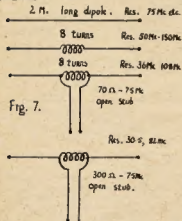


Fig. 7.

According to that which has been published as "Switching Stub Theory," it should not make any difference what type of cable is used to make the open stub, as long as the stub is tuned to the original (shortened loading inductance) dipole resonance, because we also know that any type of cable is suitable to make a stub which resonates at the required frequency.

We therefore repeat now the test with a 86 cm. long piece of 300 ohm twin lead 75 Mc. open stub. The resonances are again different and near 30.5 Mc. and 88 Mc. We could repeat the

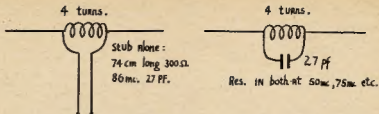


Fig. 8. Resonance of 2 m long dipole with 4 turn coil (without stub) 56 Mc. & harm.

test with co-axial cable, etc., and we will always see that the resonance of the stub alone has nothing directly to do with the resonances the loaded dipole will exhibit. It is the capacity of the cable only which counts in these cases.

10th Test

We have so far been using a coil with 8 turns of about 1.5 cm. diameter between the dipole halves. Reducing the coil to 5 turns, using an open stub of 300 ohm twin lead (74 cm. long, of 27 pF. and 86 Mc. self resonance) parallel and the 2 m. long dipole gives now resonances at 50 Mc., 86 Mc., and 153 Mc. Using only 4 turns had the desired result, because the resonances were now at 50 Mc. and 75 Mc. and also at higher frequencies. The inductor had to be greatly reduced so that the dipole with the 4 turn coil—without open stub—resonated at 56 Mc. (no longer at 50 Mc.). Replacing the stub with a capacitor of identical capacitance of 27 pF. resulted again in the 50 Mc. and 75 Mc. resonances (Fig. 8).

From this example we can see that it must be possible to make a two-band dipole for 14 Mc. and 21 Mc., or 21 Mc. and 28 Mc., applying the found principles, e.g. placing a parallel tuned circuit in the middle of the dipole. The length of the elements is not critical because the tuned circuit can replace lacking C or L, as is often done by using an aerial coupler, tuned feeder and dipole.

TRI-RESONANT CIRCUITS

We have seen that the combination of two capacitors and two inductors gave a two-band tank or two-band dipole within a 1:2 frequency range. The writer was now looking for possibilities of achieving three resonances simultaneously within this range. A

suitable combination of three capacitors and three inductors should make this possible. Two methods were investigated. Fig. 9 shows the tri-band tank circuits developed by the author. In (A) three tuned circuits are connected in parallel, two are series and one is a parallel tuned circuit.

11th Test

Two coils have 15 turns and one 24 turns, the coil diameter is 3.5 cm., the coil length is 3.5 cm. and 6 cm. The capacitors used have 20 pF., 47 pF. and 30 pF. capacity. Three resonances were found with the g.d.o. near 5.15 Mc., 12.5 Mc. and 22 Mc.

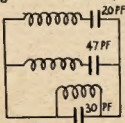
In Fig. 9 (B) two parallel tuned circuits are connected in series and to these a series tuned circuit is connected in parallel. The abovementioned coils are again used and three capacitors of 50 pF. each are employed. With the g.d.o. resonances near 4.5 Mc., 6.7 Mc. and 19.5 Mc. are found. These are only examples showing two possibilities of how to make a tri-band tank which may also be considered as equivalent circuits for tri-band aerials. In this case one of the series tuned circuits can take the place of the dipole. The parallel tuned circuits may either be of lumped components or open and closed stubs.

TRI-BAND DIPOLES

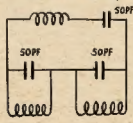
We will now describe several versions of the practical design employing the two principal circuits.

Fig. 10—The 7 m. long dipole is again used and the 5 pF. coil and an open stub 2.15 m. long of 300 ohm ribbon are connected to the centre. The dipole forms a series tuned circuit and the coil with the stub represents a parallel tuned circuit. The resonances are 13.9 Mc., 22-Mc., 54 Mc., 69 Mc., 100 Mc., etc.

Fig. 9. A. Res. 5-15, 12-5, 22 Mc.



B. Res. 4-5, 6-7, 19-5 Mc.



L-C Combination with 3 Resonances or equivalent circuits for tri-band aerials. [dipoles].

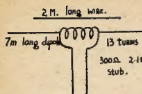


Fig. 10. Res without 2m wire, 13.9, 22, 36, 69, 100 Mc. With 2m wire, 12.8, 21, 40 Mc.

We now fasten close to the dipole a 2 m. long insulated wire, which is a further short dipole closely coupled to the main dipole. A similar arrangement has become well known as proximity dipole. Now the resonances will be found near 12.8 Mc., 21 Mc., 40 Mc. We see the strong detuning effect the short dipole has. This method may be one way to get three resonances close together.

13th Test

The same stub, coil and dipole are used, but the short dipole is replaced by the series tuned circuit formed by a 5 pF. capacitor and a coil with three turns and 4 cm. diameter. The first three resonances are now near 13.4 Mc., 23 Mc., 34 Mc., which means that they are fairly close to the frequencies we are interested in (14, 21 and 28 Mc.). The same resonances were achieved after the open stub was replaced by a 38 pF. capacitor. This was the capacity of the open stub.

It is quite possible that a metallic mounting channel holding dipole, coil and stub, has a similar effect as the short dipole or small series tuned circuit (Fig. 11).

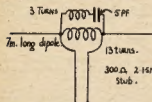


Fig. 11. Res. at 13.5, 23, 36, 96 Mc.

14th Test

The 7 m. long dipole has this time a smaller coil (7 turns, 4 cm. diameter, 4 cm. length) in the center. An open stub of 300 ohm ribbon (1.83 m. long, self resonance at 33 Mc., capacity of stub: 34 pF.) is connected in parallel to the coil. The stub is hanging straight down from the horizontally supported dipole. The resonances are 15.8 Mc., 23 Mc. and 56 Mc., etc. (Fig. 12c).

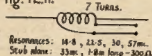
If we now fasten the open stub close to one dipole wire to get maximum coupling, the resonances are very much different (Fig. 12a). The g.d.o. shows 14.8 Mc., 22.3 Mc., and 30 Mc. as the interesting resonances, the next higher resonance was at 57 Mc.

In this particular case we had a dipole with resonance at or very near to four Amateur bands. In practice one would use tubular dipole elements and the open stub would be pushed

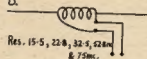
into the tubing. As already mentioned we can also use a twin boom as closed stub or loading inductance. If we push the open stub down the tubing of a twin boom, used as closed stub, the result would be somewhat similar as far as the resonances are concerned.

If we place only half the open stub along the dipole and the other half is hanging down perpendicularly, the resonances are again different, as expected, and now near 15.5 Mc., 22.8 Mc., 32.5 Mc., 52.8 Mc. and 75 Mc. (Fig. 12b).

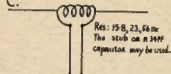
Fig. 12 A.



B.



C.



By selecting a certain dipole length, coil size, stub length, stub cable type and position of stub to the dipole or closed stub, we can change the resonances of the multiband dipole in various ways and over a wide frequency range.

15th Test

Many tests were made with the other version, where two parallel tuned circuits are in series and both are in parallel to a series tuned circuit. Fig. 13 shows the set-up.

The dipole was made from 1/4" dual tubing, and each half was 97 cm. long. One parallel tuned circuit had a 4-turn coil of 1.5 cm. diameter and 27 pF. were placed in parallel, whilst the other circuit was formed by a 2-turn coil of the same diameter and a 15 pF. capacitor was parallel connected. Without being connected to the dipole the tuned circuits had resonances near 58 Mc. and 90 Mc. The dipole with shortened circuits had a resonance near 75 Mc., whilst with the parallel tuned circuits functioning, the resonances were at 50 Mc., 75 Mc. and 100 Mc. as desired, and no other resonances could be found, which is an important feature.

Several aerials were built and investigated applying this principle of tuning a dipole to three desired frequencies which do not have to be harmonically related. If a dipole has resonances at several predetermined frequencies, it is no problem to combine several of these L-C tuned dipoles to form Yagi type arrays with the radiator, reflector and any number of directors. But other

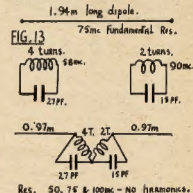
aerial types may also employ the tuning principle outlined.

Tests were made with a small oscillator and dipole as transmitting aerial working at v.h.f. As receiving aerials various arrangements were used to compare the gain and effectiveness of a full size reference dipole, shortened dipole, two and three element full size, load and L-C tuned beams. This number of tests could be made easily with the v.h.f. set-up, because the aerial has only to be a few feet high and distances of several wavelengths were easily accommodated in the backyard.

Since the frequency ratio of 50 Mc. to 75 Mc. and to 100 Mc. is equal to the ratio of 14 Mc. to 21 Mc. and to 28 Mc., the v.h.f. tests gave a good idea of what could be expected at lower frequencies.

Summing up, it can be said that the test results were so encouraging that the writer decided to convert the three element 20 m. minibeam, which had done a fine job the last two years, to a tri-band beam with L-C tuned elements similar to Fig. 13 and as just described.

The tests and measurements discussed may have changed the way of thinking of quite a few readers as far as the function of multiband beams is concerned. The different possibilities indicate that we are now only at the beginning of a new development. It is hoped that other Amateurs make tests along similar lines to check the various published theories and to develop further multiband aerials.



This paper refers only to those types of multiband beams where in any case the full length of the elements is radiating energy (unlike the W3DZZ type). It is also quite possible that other multiband beams will be described in technical magazines in the future which can be analysed in the same way and which may use the same principles outlined above. Before commercial use is made of these principles it may be advisable to check the patent situation with the authors of these publications, even when we know that most of the patent applications will never become a patent because they are often neither new, technically correct nor an invention.

The triband beam now in use at VK2AOU will be described later.

AMATEUR TELEVISION

PART THREE

BY E. E. CORNELIUS,* VK6EC/T

THE CAMERA CONTROL UNIT

This unit serves three purposes in a t.v. transmission chain—

1. To process the camera signals and make them suitable for transmission.
 2. To provide monitoring and supervision of the outgoing signal.
 3. To relieve the cameraman of much of the electronic controls of his camera, for which he has neither the time or the hands.
- I. The video signals from the camera, as monitored on the viewfinder, will need supervision and correction of the following—
- (a) Setting of black level,
 - (b) Provision of set-up,
 - (c) Insertion of standard blanking.
 - (d) Addition of composite sync.,
 - (e) Control of relative sync. and black level,
 - (f) Grey scale (gamma) correction.

2. Monitoring involves a good quality picture viewed under controlled lighting conditions, as compared with the viewfinder which is not, and a calibrated c.r.o. presentation of waveforms for checking of 1 (a) to (e), continuously during transmission.

3. The camera control unit can take over from the cameraman, control of focus, beam current and target potential, as well as correct the video level changes due to changes of lighting and scene. The cameraman is fully occupied with pan and tilt and dolling of his camera, and the maintenance of optical focus. The c.c.u. provides all these functions, and a block schematic is shown in Fig. 13.

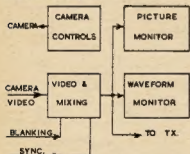


FIG. 13—C.C.U. BLOCK SCHEMATIC

The camera control unit also acts as distribution point for power and driving pulses to the camera. The four pulse trains from the sync. signal generator are best distributed in light 75 ohm co-axials, although a co-ax. type of microphone cable, of impedance about 100 ohms is available quite cheaply. I distribute these pulses via 6-pin plugs, with pins 2 and 5 earthed to the shields. The camera control unit, mixer and monitor all require sync.

generator pulses. By looping in and out of each unit, a termination can be applied at the last unit. See Fig. 14.

A dummy plug, with terminations for sync. and blanking can be used in the c.c.u. output socket, when these are not to be extended further. The camera terminates line and frame drive.

Fig. 15 shows a circuit diagram of the unit, with the four parts clearly indicated. The video section will be discussed first.

Video and Mixer

Video from the camera sees a 75 ohm termination in the input **Video Level** potentiometer, which should be a carbon type if possible. A 100 ohm pot. with a 300 ohm carbon resistor in parallel will serve. This is a front panel control. The first video amplifier V1 is a 6AU6 delivering a black positive

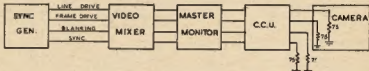


FIG. 14—PULSE DISTRIBUTION

signal to V2. In this stage, blanking is inserted from V3, a 6SN7, by means of the common 750 ohm resistor in the anode circuit. The two halves of the 6SN7 act as a blanking clipper, to clean up any "grass" on the incoming blanking signal, and for polarity inversion. The **Clipper** control is preset, its adjustment being discussed later.

V4 and also V8 and V11 are keyed clamps, providing line-by-line clamping. A discussion of their operation would be out of place in this paper, but they are treated in full in any standard textbook. But among other features, the clamp suppresses hum, and restores d.c. transmission characteristics at the point of connection.

The 6AU6 (V5) is a blanking clipper, and sets black level for the system. The front panel control **Black Level** adjusts its bias, and hence the clipping level, via the clamp V4. The 6H6 (V6) acts as a white clipper, and should be a 6AL5 for best performance. It clips off white "spikes" which would cause negative polarity overmodulation of the transmitter, and intercarrier buzz in an intercarrier-type of receiver. The preset control **White Clipper** is set to clip at the equivalent of 12½% modulation. Note that the true plate load of V5 is 400 ohms, plus the internal impedance of the 6H6 clipper, and of the voltage regulator V7B. The voltage regulator V7 stabilises the screen voltage of V5 via V7A, and its anode voltage via V7B, enabling the white clipper control to be set and forgotten; V6 can be replaced by two germanium diodes of the 150 volt type.

This stage is followed by another clamp V8, clamping the grid of V9, which is arranged as a gamma correcting stage. A short discussion on gamma may be useful. Overall gamma may be roughly defined as the ratio of brightness of two points on the reproduced image, as to their ratio in the original scene. An overall gamma less than unity would result in a washed out picture, like an underexposed negative, and a gamma greater than unity gives a "spot and whitewash" picture lacking detail in the blacks.

Any picture tube has a gamma of the order of 1.5 to 2.0, resulting in this black compression. This must be compensated in the transmitter chain. The vidicon has a gamma slightly less than unity, but further correction is needed.

The 6AU6 (V9), without the gamma network in the cathode, has a gain

slightly less than unity, and this applies at low level inputs, when the gamma diode is biased off. The polarity is such that low level corresponds to white and light greys. As the input voltage increases running towards black, the diode starts to conduct, and increases the gain by reducing cathode degeneration, thus "stretching" the blacks, and compensating for the picture tube compression. The **Set Gamma** control is preset, and once adjusted may be forgotten.

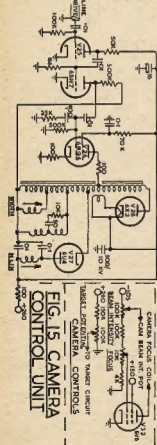
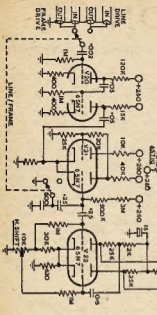
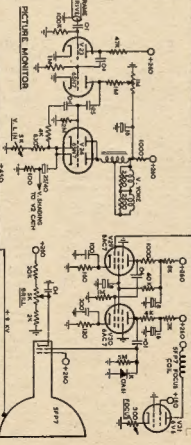
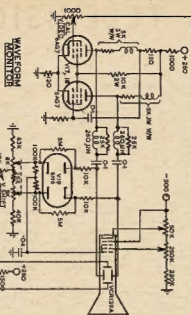
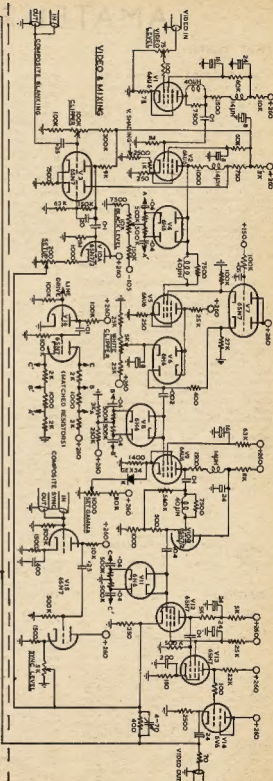
The cathode follower V10B is designed for use as part of the gamma correction circuit, with a gain control in its cathode circuit. Thus the set gamma control sets the onset of correction, i.e. at which part of the grey scale, and the gain control sets the ratio or law. As yet this last has not been incorporated, but if required would consist of a 1,000 ohm pot, 1,000 ohm resistor, and 100 µF. 40 volt electrolytic, all in series, from the cathode of V10B to earth.

This stage is followed by another clamp V11, then to the feedback output stage V12, 13 and 14, which is essentially similar to the output stage in the camera, although the 6V6 has additional output capability to deliver 1.4 volts peak to peak composite video to a 75 ohm line. It need not be discussed further.

Composite sync. is added in V15, with a panel control **Sync. Level** to control the sync. amplitude to the desired —40 units referred to black level.

The 6SN7 V10B inserts a fixed amount of blanking, termed "setup", which ensures that no black picture

* 137 Wood Street, Inglewood, Western Aus.



signals ever encroach on the sync. area, no matter how the black level control is set. A preset control Setup sets this to about 5% of picture level.

The clamp keyer tube V16 supplies keying pulses to the three keyed clamps and must be connected such that the positive going pulses from V16B cathode go to the clamp anode side, and the negative pulses from V16B plate to the clamp cathode side. In this circuit clamping occurs on the blanking pedestal in synchronism with line drive, which is early. Ideally we should clamp on the back porch, and a circuit is being devised to delay the pulses to do this.

The next unit to be described is the waveform monitor, a c.r.o. designed especially to obtain the maximum useful information from the video waveform displayed.

The horizontal deflection is by a reasonably orthodox time base, with a multivibrator designed to synchronise at one-third line rate, displaying three lines, Fig. 16A, and one half field rate (25 c.p.s.) to display one complete frame of two fields (Fig. 16B). The change from line to field display is by means of a switch, and the sawtooth constants are adjusted such that each display will be about the same width on the tube.

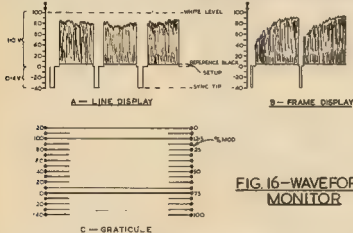


FIG. 16—WAVEFORM MONITOR

The c.r.t. plates are direct coupled for horizontal deflection, and horizontal shift is obtained by a preset control in the grid cathode circuit of the 6SN7 output tube V22.

The vertical deflection amplifier is of course a wideband video amplifier. It is designed to have a slow roll off, and down 3 db. at 2 Mc., in accordance with R.T.M.A. standards. The anode load resistors need 80 μ H. of peaking inductance in series, and this was found to be fulfilled reasonably well by the use of I.R.C. 5,000 ohm 3 watt vitreous resistors—wire wound. The component values in the anode of the left-hand 6AG7 (V17) should be checked to give equal drive on the grids. Adjust the Cal. Video control for full graticule deflection at 1.4 volts peak to peak with sync.

The outputs are capacity coupled to the c.r.t. vertical plates, with a clamping circuit (V19). As a graticule is used in front of the c.r.t., calibrated in

modulation percentage, and percent of reference level, the black level must be stable. See Fig. 16C for graticule design. To clamp the black level in register with the reference line on the graticule, regardless of picture content, the 6H6 and its associated circuit is used. The dual 8,000 ohm pots. were used because they were on hand. 10,000 ohms would probably do. Preset controls Shift and Astigmatism are adjusted for black reference, and minimum deflection defocussing respectively. The e.h.t. for the VC139A tube used is —500 volts, quite adequate if the tube is set back about 14" from the front panel, inside a blackened tube. The e.h.t. network is right for the tube and voltage used. Intensity, Focus and the Line/Frame time base switch are the only panel controls. The display should be poled such that the black (sync.) is downward.

The picture monitor section is essentially similar to that in the viewfinder, and needs little discussion. A minor addition is the vertical shading facility. A 100 ohm resistor in series with the cathode bypass of the vertical output tube V24, develops a 1.6 volt p.p. sawtooth across it at field rate. This is taken via a shielded lead to the cathode circuit of V2 in the video section. The panel control Vertical Shading enables

Layout.—This is again a matter of convenience, but is controlled mainly by the two cathode ray tubes and the panel controls. The panel layout used is shown in Fig. 17, as one basis of design. The video and mixing section is along the bottom, with the main controls, video, sync. and black level at the bottom of the front panel. The next most important, the camera controls, are right centre.

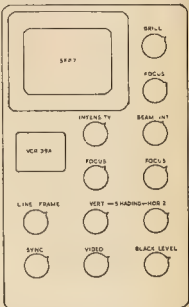


FIG. 17—PANEL LAYOUT

Simplification

In this case it is largely one of omission. A picture and waveform monitor are needed at some point in the chain and this is the most logical. But either or both may be omitted. Any of set-up, gamma correction, and white clipping may be omitted, but the clamp at the output of V2 is essential. Initially you need to retain V1, 2, 3, 4, 12, 13, 14, 15 and 18 in the chain, the omission of the two video stage V5 and V8 retains the correct polarity for the system.

Initial Adjustment

This assumes that the camera or a pattern generator is delivering a picture signal between 0.5 and 1.5 volts p.p. to the input. Check the waveform monitor for correct operation by removing V14 and injecting about 1.5 volts p.p. at say 1 Kc. into the output connector. This should give a c.r.t. display and bars on the picture monitor. Replace V14 and terminate the output in 75 ohms.

Turn off the video input by the Video Level control, reduce Sync. to zero. Advance the Black Level control and adjust the preset Clutter control for a display of blanking pedestals (downward) with no tilt on the horizontal parts. See that the Black Level control has sufficient range to raise the pedestal to the full 1.0 volts on the c.r.t., and reduce it to zero. Reduce to

(Continued on Page 17)

the top of the picture to be made brighter than the bottom, and may be necessary to offset the inverse effect from the camera.

The video amplifier is somewhat different from that in the camera in that the first 6AC7 has low gain and a rising h.f. response. The second has high gain and reasonable voltage output by virtue of the 4,000 ohm anode load resistor. This stage has a falling frequency response, to complement its mate. This method is practicable because signal high frequency components rarely have high amplitude and the second stage is not overloaded. The overall response of the amplifier is flat to 6 Mc.

Camera Circuits.—The c.c.u. has panel controls for camera Focus and Beam intensity, and a preset control for Target Potential. These were discussed when describing the camera, and an optional focus circuit shown.

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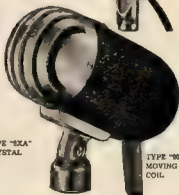


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S.W.L. GROUPS

Editor "A.R." Dear Sir,

As an active short wave listener and an associate member of the Victorian Division, W.I.A., I am very interested in the growth of s.w.l. activity within the W.I.A. as a whole.

However, I am rather perturbed at the apparent lack of interest in States other than Victoria, in the promotion and encouragement of Short Wave Listener Groups within the various Divisions of the W.I.A.

I might also add that this lack of interest does not apply only to the official bodies of the W.I.A. but to a large extent to individual Amateurs both members and non-members of the W.I.A. This state of affairs is regrettable.

For the benefit of those individual Amateurs I recommend that they take a look at the fourth point of "The Amateur Code". This states, and I quote: "The Amateur is Friendly . . . friendly advice and counsel to the beginner . . ." etc. "These are marks of the Amateur Spirit." Whilst taking a look, many may benefit from reading the whole six points of the Amateur's Code through several times, and then asking themselves if they can truthfully say that they always abide by this Code of Conduct. So much for the individual.

It is now to the position of the W.I.A. that I wish to refer. This body has pledged itself to as far as possible protect the interests of Amateur Radio. It cannot do this and ignore s.w.l.s. The s.w.l. of today is the raw material of the fully fledged Amateur of tomorrow. If new blood is not infused into the Amateur ranks, and fostered and nurtured in an organised manner the day when the Amateur will be a historical curiosity is not very far away.

With more and more services desiring more and more frequency allocations, and the number of active Amateurs slowly and surely decreasing, this is bound to happen if something is not done about it, and done NOW.

It is up to the W.I.A. to do its level best to see that this does not happen, and the most efficient method of carrying out this phase of self preservation is for each Division to ensure that it has an active organised S.W.L. Group within its administration.

Of course it will mean hard and, perhaps at first, almost heartbreaking work for some people or persons, but would not this be worth the effort if it aids in preserving the present Amateur bands?

In each State where there is as yet no such Group active, I can name several keen s.w.l.s. who have personally written to me deprecating the fact that they do not have such a Group.

Perhaps the officials in these States will say they have tried, but the question is, "Do they realise the value in having such a Group, and have they tried hard enough?"

I am afraid that I have seen little or no publicity given to the proposed formation of Groups in the States con-

cerned. WHY? If it is due to sheer lethargy on the part of office-bearers, it should not be tolerated by members. In that case the members have the remedy in their own hands.

Within the Victorian Division results since the formation of an S.W.L. Group have been encouraging. The Group was formed a little over three years ago and already approximately 16 of its members have passed the examination for either their A.O.C.F.P. or A.O.L.C.P. The Victorian Group has on its books 60 s.w.l.s. registered with the Division. Assuming that 50% of these listeners were over the age of 16 years and financial for the three year period, and that I believe is a quite conservative estimate, it would mean that an amount of £220/10/0 had been paid by Group members in fees.

There are, of course, many other facets of S.W.L. Group activities which I cannot go to the lengths of enumerating here.

The fact is that on the basis of the matter laid out above, it is not a matter of "Do we want an S.W.L. Group within our Division?" but "Can we afford not to have an S.W.L. Group within our Division and miss the opportunities offered?"

I ask all right thinking and foresighted Amateurs to ask this question of their own Division.

There are several unselfish individual Amateurs doing their best to assist s.w.l.s. and coach them for the exam, and to these gentlemen I wish to pay tribute.

—Ian J. Hunt (WIA-L3007).

[We commend this letter to the attention of all Divisional Councils.—Executive.]

AMATEUR TELEVISION

Editor "A.R." Dear Sir,

I am interested in Amateur Television transmitting and have just received film strips from the British Amateur T.V. Club and hope to receive lecture tapes from the club soon.

I am endeavouring to contact others interested and hope, with the W.I.A.'s help, we may be able to exchange information with other enthusiasts and perhaps form a t.v. group similar to the British one.

At the moment I only have simple flying spot gear, a 931A phototube and a 5FP7 c.r. tube.

Anyone interested could contact me on 7.1 Mc. at 1230 or 1800 hours, on most days, or at 75 Gheringhap Road, Geelong (Phone X 5674), or contact VKs 3ABK, 3AUX or 3AAK who are active in Amateur T.V.

—Bill Brownbill, VK3BU.

A WORD OF EXPLANATION

Editor "A.R." Dear Sir,

For some time I have been interested in the complete explanation of a.s.b. and after a lot of delving into books, etc., I finally developed the explanations I was looking for and hence wrote the article.

As has been pointed out, the "proof of the pudding is in the eating." S.s.b. signals do seem to have much more "punch" behind them than it would be expected and this I find it hard to explain. There are three possible reasons I can think of: (1) The peak power of the s.s.b. signal on the air is much

higher than that stated. (2) When an a.s.b. signal is tuned it is tuned so that the sideband is in the centre of the resonance curve of the receiver, whereas in tuning an a.m. signal the carrier is in the centre and the sidebands are attenuated somewhat. Even the broadcast receiver has a reduced response at plus or minus 3 Kc. (3) Some receivers are less sensitive to signals with weak carriers and hence give better performance with strong injected carriers. I think there may be more to it than this and I would be interested in any better explanation.

To suggest that the peak power of an a.m. signal is 400 watts and therefore a peak sideband power of 400 watts can be used is erroneous. The 400 watt peak is only instantaneous and does not represent the power contained in either the carrier or the sidebands. Using a similar argument it could be concluded that a peak a.s.b. power of 150 watts would be legitimate.

I trust I have left no hard feelings with the a.s.b. gang for I am actually quite partial to the system. The wording of the article may have been a bit drastic.

—J. A. Adcock, VK3ACA.

NATIONAL FIELD DAY CONTEST

Editor "A.R." Dear Sir,

Judging by the amount of space devoted in the March issue of "Amateur Radio" promulgating the result of this year's Contest, one can only assume that the number of entries was very much smaller than in previous years.

I know the Federal Contest Committee has endeavoured to make this event more popular (and to please everyone), but they appeared to have achieved a reverse effect.

Twice in the last three contests the rules have been loaded against portable equipment NOT operating on two metres.

While the two metre stations can work placidly the numerous others on this band in and around the capital city, the station on (say) 7 Mc. has to battle against QRM for many more operating hours to obtain a similar number of contacts. However, the latter station does have solid Interstate contacts in addition to Intrastate ones and so proves the general efficiency of his equipment under adverse conditions.

I would like to point out that the frequencies used during emergency work over the past few years were mainly in the region of 7 and 3.5 Mc. and it is considered safe to assume that similar frequencies would be the most reliable in future emergencies under the W.I.C.E.N. organisation.

Minor roles might be allotted to v.h.f. stations for close contact work, but I consider the foregoing emphasises the point I am trying to make and this is—the v.h.f. and low frequencies are like poles apart, they should not be brought into competition with each other in our N.F.D. Contest.

Taking into account the number of participants and the overall general interest, I would say that the Contest staged under the 1957 rules was the most successful for many years.

May I suggest to the Contest Committee that they cease varying the rules each year and settle on one set of rules to govern the competition. Even the rules of a few years ago were con-

sidered satisfactory, the only objection being that it was of 24 hours duration.

However, perhaps these are only my views; those of other participants, and particularly of those who have dropped out of the Contest over the years, would be of interest.

—Geo. E. Every, VK3GE.

ZZ AND VK CONTACTS

Editor "A.R." Dear Sir,
Greetings from Cambridge. It may interest your members to know that during the year 1957 I had 723 contacts with New Zealand and 192 with Australia.

The star station was as usual—Jim ZL2BE with 410 QSOs.

Other main scorers in my log were:	
ZL1WT	7
ZL1GJ	8
ZL1JV	8
ZL2AFA	11
ZL2AHM	6
ZL2RR	5
ZL3RB	14
ZL3TH	7
ZL3BL	11
VK2AMG	20
VK2WT	10
VK2OQ	6
VK2ASQ	6
VK2ALL	5
VK3JK	6
ZL3BG	5
ZL3IE	5
ZL3KE	30
ZL3ABX	29
ZL3AE	22
ZL3HJ	11
ZL3AG	11
ZL3AL	11
ZL3AGC	6
VK3BK	6
VK3HG	5
VK3JA	5
VK3KL	5
VK3BG	5
VK3MS	5

—B. M. Scudamore, G6BS.

OBlique STROKE F.O.C.

Since publication of last month's magazine a letter has been received from F. T. Hine (VK2GJ) on the subjects of F.O.C. and related matters.

Although the matter of Oblique Stroke F.O.C. has been closed, W.I.A. Federal Executive's comments are of interest:

"The attention of all licensed Hams is drawn to the obligation imposed on them to conform at all times to the Regulations, since this is a condition upon which licenses are granted.

"It is probably not inappropriate, also, to draw attention to the six articles of the Amateur's Code."

AWARDS

WORKED ALL YUGOSLAV REPUBLICS—W.A.Y.U.R.

The W.A.Y.U.R. Award is granted by Seven Radiomasters Yugoslavia to each Amateur throughout the world who submits proof of having established contacts with Amateur stations in each of six Yugoslav federal republics.

Overseas Amateurs other than from European countries must make two contacts per republic (16 contacts in all), working various Amateur stations (different call signs) of each Yugoslav federal republic.

Contacts with the Amateur stations in each federal republic must have been made on two Amateur bands at least.

The call signs of the federal republics are as follows:

- YU1—Srbija (Serbia).
- YU2—Hrvatska (Croatia).
- YU3—Slovenija (Slovenia).
- YU4—Bosna i Hercegovina (Bosnia and Herzegovina).
- YU5—Makedonija (Macedonia).
- YU6—Crna Gora (Montenegro).

Contacts may be made on c.w. (TS at least) and/or phone (RG at least) after 1st February, 1960.

QSL cards must accompany applications, and a summary sheet with following data: call sign, received report RST or RSM, Amateur band, and 5 I.R.C.s. (for foreign Amateurs).

Applications for the W.A.Y.U.R. Award, together with QSL cards, summary sheet and coupons should be sent to S.R.J. (for W.A.Y.U.R.), Post Box 324, Beograd, Yugoslavia.

EMERGENCY NETWORK OPERATES AFTER QUEENSLAND CYCLONE

You will have all heard via the radio news and newspapers that a cyclone had again struck in North Queensland during the evening of 1st April, doing tremendous damage of over one million pounds. The township of Bowen and surrounding district was severely hit. Wind gusts of up to 110 miles an hour were recorded.

At 11.30 a.m., April 2, Don VK4PW, who is situated at the Coalfields at Collinsville, 53 miles from Bowen, came on the air with emergency traffic from the Police Department as all means of communication had been disrupted. After calling for a long time, he was heard at 1.30 p.m. by Harry VK4LE, of Adventure Downs, who in turn relayed to Police at Springsure. They immediately contacted Rockhampton Police, giving a survey of the damage.

At 5 p.m., VK4RW had his aerial re-erected after being blown down the previous week and was ready to take messages from Don VK4PW for broadcast over Radio Station 4AY re river heights, which was promptly relayed by Railway Department telephone to Ayr. The Railways also being alerted.

Third message received at 6.4 p.m. and relayed to John VK4DK at Ayr 6.20 p.m., who, after being alerted, came on the band. VK4WI came on at 7.10 p.m. to get information for Authorities in Brisbane, and heard contacting VK2WI to keep channel clear on 7080 Kc.

Bert VK4WI again came in at 9.30 asking for repeats of messages 2 and 3, stating that he could not find Bowen River on his map. Last message for the night of the river height was passed at 10 p.m., when Bowen River had risen to 56 feet. Stations signed out at 10.45 p.m., after making schedules for 7 a.m. next morning.

At 6.55 a.m. John VK4DK and Bob VK4RW contacted Don VK4PW and advised the river had risen to great height. There was no reading as communication with Birralee had been broken. Next asked at 9.30 a.m. to take two Police messages and message from Postmaster seeking permission to send public telegrams.

Bob VK4RW passed messages to the appropriate channels and alerted the Radio Inspector, who came in at 10 a.m. with VK4AA and arranged for a patch line to the Collinsville Police operating room. Don VK4PW was kept busy during the day handling P.M.G. traffic with the assistance of the local Postmaster.

John VK4DK came on at stated times to obtain river reports; the highest reading taken before gauge was covered being 70 feet. Vern VK4LK did yeoman service on the Flying Doctor Service network, collating reports from outside stations.

P.M.G. traffic ceased about 5.25 p.m. when VK4AA made schedules for the evening, leaving the receiver running until midnight. Bert VK4WI called in again on the hook for latest information at 7.45 p.m. and arranged for Jim VK4PR to listen in case VK4WI was required.

The schedule at 9 a.m. on Good Friday was held by VK4AA, VK4RW,

VK4PW with Mark VK4MJ on the side fence; Mark had monitored at all times Sergeant Gill, of Collinsville, came on the mike at VK4PW and personally thanked the following stations: VK4AA, VK4PW, VK4LE, VK4RW, VK4DK and others who had helped. VK4AA thanked the Sergeant on behalf of Radio Amateurs and said that is the aim of the boys to give assistance when needed.

As telephone communication, at the time of writing, will be out for a few more days, only Don VK4PW will be working with VK4AA.

"Well done gang!"

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SUCCESSFUL URUNGA CONVENTION

The Ninth Annual Urunga Convention is now an extremely pleasant memory to the 52 who converged on Urunga for Easter week-end. Those who registered were:

VKs 2BZ and family, 2FH and family, 2FP and XYL, 2GV, 2JS, 2PM and family, 2PY, 2RU and XYL, 2SF and family, 2VV and XYL, 2WQ, 2XT, 2ACU, 2ADN and XYL, 2ADT and family, 2ARU and family, 2AHA and family, 2AHH, 2ALJ, 2AOR and family, 2APQ, 2ASZ and XYL, 2AWG, 2ZCQ and family, 2ZCQ, 3ALQ, 4FP, 4VS, 4KO. Associate members: Bob Bailey and XYL, Norm Dash, L. Gilbertson, Snow McAuley, Norm Moody and XYL, Fred Reid, Cec. Siebel.

To all these, the organisers would like to say "thank you" for coming and that we hope you enjoyed yourselves and will come again next year.

It was very pleasing to have our State President, 2APQ, and Secretary, 2ALJ, with us, and I know that many questions were answered by Perce and Norm and that all those present now have a better understanding of Institute affairs.

A lot of new faces were present, particularly among the younger members, and many new friendships were commenced. Ian 2ZCK, of Moree, was 21 during the Convention, and news leaked out that Bill 2AWG is going off the deep end in May. Congratulations to you both!

Many tales can be told and situations recounted, but only the present could enjoy to the full the pulsating life of the Convention. To watch Alan 2FH auction a barrowful of disposals gear is first class entertainment, and to listen to the bidders trying to out-fox him is also a performance of high standard.

The 144 Mc. hidden tx hunts called for top class operating skill. The first, hidden by 2AHH, was planted on the edge of a bitumen road, but just like the bees, the hunters went where the scent was strongest and would not stop on grading new roads in the scrub and paying the penalty of being bogged. Only two found this tx, whilst the remaining three were separated from it by the Bellinger River.

In the 144 Mc fox hunt a well known Sydney v.h.f. man assured me that the fox is always caught, but when I left Urunga he was still there trying to puzzle out just where the fox (2AHH) got to!

The position for the second hidden tx hunt was selected by Brian 2ZCQ and Assoc. Fred Reid, who once again superbly camouflaged the tx, so much so that three cars stopped within 100 yards of it to take bearings, and then moved off without seeing it. After a bit of backing, however, two cars succeeded, but the third didn't catch on for another 20 minutes.

I must thank the home stations for their magnificent support of the I.F. contests. Without them our Convention would surely be damped. Conditions were good and despite the fact that 10 portable stations were operating over a very small area, interference with each

other was negligible. However, it must have sounded bedlam to listeners and would-be rag-chewers. Some of the operating techniques used were extremely slick but very effective. To stand the service is a compliment to the equipment used and augurs well for W.I.C.E.N. requirements.

The complete list of prize winners is as follows:

No. 1 Fox Hunt: 1st, 4JP, 25 mins.; 2nd, 2XT, 60 mins.

Gerry Challenger Memorial 7 Mc. Contest: 1st, 2AHH, 58 pts. (3rd win in succession); 2nd, 2XT, 52 pts.; 3rd, 3ALQ, 48 pts.

144 Fox Hunt: 1st, 4JP, 20 mins.; 2nd, 2ZCQ, 25 mins.

Ladies' 144 Blindfold Hunt: Heat winners: Mrs. Whyte (XYL of 2AHA), Mrs. Hill (XYL 2ADT), and Mrs. Fitton (XYL 2SF)

No. 2 144 Mc. Hunt: 1st 2PM, 38 mins.; 2nd, 2AHH, 39 mins.; 3rd, 2AHA, 55 mins.

Urunga Scramble: 1st, Tie between 4FP/3ALQ 36 pts.; 3rd, 2AHA, 35 pts. Best miles per watt, 4JP who worked a W7 on 15 mx.

Furtherest distance travelled: 3ALQ.

Ladies' Penny Tossing Competition: Mrs. R. Bailey.

Ladies' Lucky Registration No.: Mrs. Collett (XYL 2RU).

Gents' Lucky Registration No.: 2APQ.

The Convention report would not be complete without thanking the persons who rendered such stirring assistance. Secretary Norm Dash carried on a winning paper war. Alan 2FH really battled to rid himself of a batch of disposals for which Rod 2ACU was good enough to make a special trip to Sydney to obtain, whilst Brian 2ZCQ and Assoc. Fred Reid did a good job with the hidden tx.

Wireless Institute of Aus. New South Wales Division A.O.C.P. CLASS

will commence in July

★

The Classes will be held in the

Railway Institute Rooms
Castlereagh Street, Sydney.

★

Full details can be obtained from

Secretary W.I.A., Box 1734,
G.P.O., Sydney, N.S.W.

The business houses who contributed to our prize list were Australian Electrical Industries, Philips Electrical Industries, Amalgamated Wireless Valve Co., United Radio Distributors, and Associated Newspapers—Radio, T.V. & Hobbies division

Our usual Saturday night emission testing period was held in the "Do Me" shack of Crieff 2XO, who is at present touring New Zealand, and our thanks go to him for making the shack available.

Ted Harvey, who screened our films on the Sunday night, did an excellent job and presented a really excellent home-made colour film entitled "Early Tomatoes," which covered the tomato growing industry around Coffs Harbour. Congratulations Ted on an excellent production!

It was good to see our regular Interstate friends, 3ALQ, 4FP, 4KO, and 4VS, and we do look forward to seeing them again next year.

There is twelve months available now to get gear ready for Urunga 1959 and if you chat to those who have been before, you will certainly want to set aside Easter 1959 to come to Urunga.

—2AHH, Zone Officer.

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THE DUTIES AND POWERS OF W.I.A. FEDERAL CONTEST COMMITTEE

One of the integral parts of any society is the organisation of healthy competition between members. In this regard some person or persons must be entrusted with the duties of organising such competition in order to stimulate interest and promote friendly rivalry. Such is the duty of the W.I.A. Federal Contest Committee.

1. The body shall be known as "The Federal Contest Committee of the Wireless Institute of Australia".

2. The objects of this committee shall be to organise such competition in contests as is necessary to stimulate interest and promote friendly rivalry.

3. The Federal Contest Committee shall consist of a Chairman, Secretary/Treasurer, and three (3) other members, all of whom shall be ex-officio members of the Federal Executive.

4. To be eligible for appointment to the Federal Contest Committee every nominee shall be a voting member of his Division.

5. The committee shall be appointed annually by the Federal Executive from nominations received from any Division.

6. Within 28 days of its appointment, the committee shall notify Federal Executive of its officers.

7. The tenure of office shall be for a period of twelve (12) months, but notwithstanding this, the Federal Executive may, at any time, terminate any or all of these appointments.

8. In the event of a vacancy occurring on the committee, the Division concerned shall within 14 days nominate another member to fill the position.

9. The duties and powers of the Federal Contest Committee in relation to contests conducted by the Federal Council of the Wireless Institute of Australia shall be—

(a) Prepare a set of rules for contests which shall apply to all Federal Contests.

(b) Prepare suggestions for improving the rules of contests with the object of making them more interesting and equitable to all contestants, and desirable in regard to changes of rules. (Opinion of Divisions shall be sought on any proposed amendments which would alter the nature of the contest, awards to be made or method of scoring.)

(c) Arrange publication of the rules of all Federal Contests, both locally and overseas, as members.

(d) Arrange publication of such rules in "Amateur Radio" at least one (1) month (and preferably earlier) before the date of such contests.

(e) Supervise the conduct of contests in relation to the appropriate rules.

(f) Arrange for the collection of all entries to Federal Contests.

(g) Arrange for the checking of all logs or entries.

(h) Arrange for the publication of rules, results and winners of contests including overseas contests.

(i) Arrange for the preparation of certificates and/or awards, and the forwarding of same to the successful participants as soon as practicable after the results of contests are decided.

(j) Keep a register of all certificates issued and awards made.

(k) Keep an up-to-date record of the rules of all contests.

(l) Carry out the wishes of Federal Council by making such changes to the rules as are initiated by Divisions and approved by Federal Council.

(m) Carry out such Contest Policy Directives as are issued from time to time and/or are contained in the Annexure attached hereto.

(n) Publish Federal Notes for publication in "Amateur Radio" through Federal Executive.

10. The Federal Contest Committee shall at all times communicate with Federal Council through the Federal Executive.

(a) In matters of urgency ONLY, requiring a vote of Federal Council, the Federal Contest Committee may communicate with Federal Councilors, submit a copy to Federal Executive on such matters, providing that the result of such vote is to be referred to all Federal Councilors within fourteen (14) days.

(b) In matters of extreme urgency where there is insufficient time to comply with the provisions of para. 10 or 10(a), the Federal Contest Committee may apply to Federal Executive for a decision to be made under the Federal Constitution Section 24.

11. The Federal Contest Committee may if it so desires obtain the assistance of other members of the Institute for checking of logs.

12. The Federal Contest Committee shall deal with matters pertaining to the following Federal Contests, or such other contests as are added from time to time by direction of the Federal Council—

(a) VK/ZL DX Contest.

(b) Remembrance Day Contest.

(c) Ross Hull Memorial Contest.

(d) National Field Day Contest.

In relation to the VK/ZL Contest, it shall liaise with the N.Z.A.R.T. who conduct this contest bi-annually with the W.I.A., and ascertain that any claims initiated by tourist society are expeditiously brought to the notice of the other.

13. The costs of administration of the Federal Contest Committee shall be paid by Federal Council. No contest fee shall be levied by the committee without the authority of the Federal Executive.

14. A statement of such expenditure shall be rendered to the Federal Executive for inclusion in the Federal Balance Sheet at a date to be specified by Federal Executive.

15. The Federal Contest Committee shall submit to Federal Executive a report of activities for consideration at the Federal Convention, or inclusion in a Federal Executive Report. (This report shall be available for publication (14) days prior to the date of the Convention.)

16. Upon termination of tenure of office of the Federal Contest Committee, all records shall be completed and returned within twenty-eight (28) days to the Federal Executive.

17. Finally, the Federal Contest Committee is at all times to consider itself as operating under Federal Council through their agency the Federal Executive.

ANNEXURE OF CONTEST POLICY DIRECTIVES OF FEDERAL COUNCIL

Details of Contests shall be referred to the Federal Council for comment before promulgation. (C94)

All contests of a Federal nature are conducted by Federal Executive under direction of Federal Council, who reserve the power to approve or otherwise of any Division conducting special contests. (C95)

Draft proposals for any changes in rules of Australian contests are circulated to all Divisions at least three months before the contest. (C11)

The Northern Territory is classed as a separate area for contest purposes in Australia. (C18)

The use of the W.I.A. Standard Log Sheet is recommended for use by all contest participants. (C18)

In future N.F.D. Contests fullest publicity be given by all Divisions in every way possible for at least three months prior to the contest; and further that Divisions organise State teams to ensure active participation by all States. (C13)

Federal Council consider it of the utmost necessity to expend interest in the N.F.D. Contests in view of the future requirements of Civil Defence. (C34)

The standard numbering system recommended and agreed to by a majority vote of the I.A.R.U. Societies will be used by the W.I.A. (C27)

A standard set of rules as submitted in 1950 be adopted for VK/ZL Contests. Draft proposals for any change in the standard rules of the VK/ZL Contest be circulated to all Divisions at least five months before the Contest. (C10)

An open award considered higher than the existing award be made for future VK/ZL Contests to be determined from the sum of the final scores of a competitor's entry for both phone and c.w. sections. (C12)

The Federal Contest Committee investigate carefully the rules of all Australian Contests with a view to maintaining uniformity at least two years. (1952/4,5)

The Ross Hull Memorial Contest be extended to include all V.H.F. bands as soon as possible. (1952/3,4)

The Federal Contest Committee to frame a fresh set of rules for the Remembrance Day Contest to be held at the larger States, VK3 and VK3, may in future have a more reasonable chance of winning the contest. (Note. This decision received Fed. Con. 1952/2,3 Replaced by motion 2.3.11953)

That consideration be given to finding a more suitable day for the National Field Day. (1952/3,4)

Federal Executive be instructed to pursue Overseas and Local Calendars to determine a clear week-end at the end of February or beginning of March in each year. (1952/3,4) (Ref. 1952/4 above)

BOOK REVIEW

INDUSTRIAL RECTIFYING TUBES

By Members of Philips Electron Tube Division

In this book details are given on all aspects of rectifier tube design and application.

In particular, reference is made to their use in battery chargers, cinema arc-lights and industrial welders. All types detailed are of the gas-filled variety. Data is given on 18 tube types, as well as details of their use in their various applications.

This book will be of particular interest to those associated with the design of low voltage, high current power supplies.

Our copy from Messrs. Philips Electrical Industries Pty. Ltd., Philips House, 69-73 Clarence Street, Sydney. Price in Australia, 18/-.

ANALYSIS OF BISTABLE MULTIVIBRATOR OPERATION

The Eccles-Jordan Flip-Flop Circuit, by P. A. Neeteson. From the Philips Technical Library.

This bistable multivibrator was first conceived by Eccles and Jordan in 1919, but has only been applied over the last few years to the important role in electronic pulse apparatus such as counting machines.

In this book a thorough analysis of the dynamic behaviour of the bistable multivibrator is given. Circuit design is fully covered, taking into account the influence of tube characteristics.

Chapters include discussions on the dynamic condition, the complete trigger cycle, variations of the fundamental circuit and way of triggering, as well as a survey of literature on the subject.

This book will be of intense interest to all associated with electronic design in the computer field.

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PREVENTION OF INTERFERENCE BY TELEVISION RECEIVERS

B.B.C. Director-General Congratulates American Amateur

A television receiver is capable of producing interference with broadcast reception over a limited area. This interference is due in the main to induced electric fields and magnetic fields set up in the neighbourhood of the television receiver; re-radiation of parasitic oscillations from the receiver proper is less serious and will not be considered here. The electric field is the more troublesome since it will affect broadcast receivers having ordinary aerials; the magnetic field will influence only that minority of receivers having frame aerials.

The most important sources of interfering electric fields are the line output transformer and associated high potential points; the deflector coils; and high impedance circuits near these components. Since, in general, magnetic fields emanate from the same sources, the measures recommended below will reduce both causes of interference.

(1) The e.h.t. transformer, booster diode and line output valve should be totally screened by a can which makes good contact with the chassis. Two-hole fixing of the can is not entirely satisfactory and it is advisable to make multiple connections between can and chassis. The difference in radiation between a good and a bad connection here may amount to as much as 8 db. for magnetic fields.

(2) Any width or linearity controls of the inductor type should be screened separately if they cannot be accommodated inside the line output screening can.

The design of the line output screening involves problems of ventilation to

avoid overheating of the components enclosed by the screen. As a general guide to designers, the maximum safe bulb temperature for the PL81 line output pentode has been determined at 185°C. (design centre rating).

(3) The deflector coils should be screened as far as possible by an aluminium can or by metal foil wound coaxially around the coil and earthed to chassis. Care must be taken to ensure that there is no likelihood of voltage breakdown between the foil and the coils. This form of screening will give good reduction of electric fields and will also reduce magnetic fields but not to the same degree.

To reduce the magnetic field still further, the deflector coil screening can should have endplates with holes only just large enough for the tube neck to pass through. This gives a further reduction of approximately 6 db.

(4) Care should be taken in the layout of the receiver to keep circuits of high impedance well away from the worst sources of interference.

(5) The graphite coating of the cathode ray tube should be efficiently connected to earth—preferably from two separate points on the coating.

(6) Both conductors of the mains supply should be connected to the earth terminal via 0.05 μ F. paper capacitors rated for 800 v. r.m.s. working.

(7) The use of a perforated foil screen at the back of the set will reduce radiation in that direction.

[Reprinted from "Mullard Valve Notes No. 1, published by Mullard Ltd., Technical Publications Department, Century House, Shaftesbury Avenue, London, W.C.2.]

AMATEUR TELEVISION

(Continued from Page 2)

zero and adjust Setup preset to give about 5% of pedestal. Turn up the Sync. control to see that the sync. level can be varied from zero to about 50% maximum. Adjust to 0.4 volts. Check that raising the pedestal causes the picture monitor to retrace lines to disappear.

Advance the Video Level control to give 1 volt of picture information. With a calibrated c.r.o., check output voltage across the 75 ohm termination, adjust sync. to 0.4 volt, video to 1.0 volt, then calibrate waveform monitor to agree using the Cal Video preset and V. Shift to bring the black level to the 0 volt on the graticule. Then sync. tips should reach -40 and video +100. Once calibrated, the waveform monitor is your guide for all future tests and should not be touched.

The White Clipper preset is next adjusted to clip at the +1.0 volt level (124% mod.) and it should not be possible to force video peaks beyond this level. The Set Gamma control can only be adjusted with a grey scale test chart before the camera. This will be discussed later in this series.

Similarly the peaking capacitor in the feedback output stage is adjusted for minimum ringing on a sharp edge, just as the overshoot, as seen on a c.r.o., changes from one polarity to the other.

No discussion of the picture monitor seems necessary, as it conforms very closely to receiver circuitry and techniques. The focus stabiliser is not essential but very useful, although permanent magnet focussing should be ideal.

Substitute Tubes

Once again these tubes were used because I had them. The 6SN7s can be replaced by almost any of the double triodes, as long as current handling ability is assessed, when replacement is considered. In the video amplifier, 6SF7s throughout would be ideal and 6AL5s would be better than the 8FDs. The VCR139A could be replaced by the 3KP1, 3BP1 or VCR138, although physical size should be considered.

Critical Components

Match the pairs of resistors in the clamp keyer and the resistors in the regulators (V7), anti-clipper (V6) are fairly critical and should be checked by experiment. As long as the White Clipper control has a range of threshold from 0.7 volt of video to well off waveform monitor screen—say 1.5 volts—it will be satisfactory. The components in the network of the clamp V19 are also fairly critical to allow clamping in register with the graticule.

Next month I will discuss power supplies for television transmission and details of that for the camera and c.c.u.

The operation of Radio Hams—or Amateurs—exchanging signals and conversations from continent to continent, are normally of little interest to the non-technical public, who look to radio for news and entertainment. But in January an enterprising American Ham—17-year-old schoolboy Jules Madey, of Clark, New Jersey—made an exciting contribution to B.B.C. programmes, which brought him a cable message of congratulations and thanks from the Director-General of the B.B.C. Sir Ian Jacob. It was Jules' initiative which early on the morning of January 24 made possible a direct radio and telephone hook-up for which British Post Office and B.B.C. engineers had been hoping for weeks between Dr. Vivian Fuchs, then at the South Pole, and B.B.C. reporter, Donald Milner, in London. As a result, the conversation between the two men, which was heard clearly by listeners to B.B.C. Home and Overseas News programmes throughout the day.

For a year or so contact has been made from time to time between the American scientific station at the Pole and Radio Amateurs in the United States. The most successful of these had been a 7-year-old Jules, who operates in New Jersey. He has been able to put members of the American party at the Pole in touch with their families by "plugging them in" to the ordinary telephone system. Donald Milner had asked him to let him know if there was ever a chance of extending his service to him in London.

But radio conditions in Antarctica are the worst in the world, and apart from this the transmitter at the Pole had been out of action for nearly a month. When reports came in that Dr. Fuchs had left the Pole, there seemed to be no further hope. But the reports were premature. The same night Jules Madey was attending a school reunion in Clark, New Jersey. He came back to find a friend who was manning his set just fixing up a telephone link between Mr. Mogensen, the American scientific leader at the Pole station, and his wife. As Madey came in, Mogensen said that he must leave his set for the moment to go and see Dr. Fuchs off. Realising that Fuchs was still at the Pole, Madey asked Mogensen if he would ask him to come back and have a word with Milner in London.

Meanwhile, Madey put through a personal call to Milner's flat by trans-Atlantic telephone, and so at a quarter-past-four in the morning Milner was awakened by the phone ringing and Madey saying that Dr. Fuchs was waiting to speak to him. Then the familiar voice came through to London from the bottom of the world.

A live conversation by trans-Atlantic telephone between Jules Madey and Donald Milner was broadcast the following day in a B.B.C. programme for listeners in Britain.

—B.B.C. Press Release.

Ian J Hunt, WIA-L3007
211 St. George Road,
Northcote, N.16, Vic.

As a beginning to these notes I would like to point out the reason why some letters received by me are not mentioned in these notes until about two months have elapsed from the time I receive them. The reason is that I am supposed to submit the notes on or before the 5th of the month preceding the month for which the notes are to be published. As a result, for the May issue of the magazine I must have the notes in to the Editor by the 5th April. Well, in this case, as Eester has intervened I have held back my effort until the 5th. I therefore appeal to all those who may write to me not to wait for the latest issue to come out to see if your previous correspondence was included (if you sent it in time it will be anyway), but to make sure that I receive your contribution well before the beginning of the month. Please wake up to this fact fellows. Please write to me to provide dope for this column.

My reference to Eric Treiblhook last month brought forth a letter from that worthy gentleman, who has by the way just returned to VK3 after a short bout of duty in VK6, some of which may prove of interest to those (if any) who read these notes. Eric states that he will not be entering our current contests advertised last month, so many of you can therefore breathe a sigh of deep relief. The contents of VK origin, which mainly interest him happen to be the VK-21, Contest and the R.D. Contest. Eric mentions quite casually that the following statistics may indicate something of his listening efforts. Last year he received 447 QSL cards from 157 countries, representing 38 zones. So far this year he has on hand confirmations from 144 stations, representing 33 countries and 28 zones. His post-war total is (and I pause for a deep breath), 4,801 QSL

cards received, giving him 239 countries confirmed with 40 zones represented. There were 30 there you are chaps. It just goes to show what you can do if you really try. All the above figures, by the way, are applicable only to reception of Amateur stations. Keep it going Treb, some of us might catch up to you sometime within the next hundred years.

A letter from Dave Jenkins, WIA-L3039, of Orboet, informs us that he is still alive and listening. Between his periods of milking the cows he has heard on 14 Mc recently K34, OH1, FK4, Z346, K5, ASBDE, U40, DUB VK3, UIC and OH2. Dave has been suffering badly from trouble as when his dry batteries get a bit low they can't push out enough herbs to run all stages of his rx. Apparently towards the end of the month things generally get down to looking like a detector and one audio stage. However, Dave says that the good old faithful L.F. seems to work provided he does not bump the table and show up those few loose connections. He has some sewed up his sleeve concerning a new super duper rx but says he won't reveal the details until he has it working.

VK3 S.W.L. GROUP

This is just the news that I feel many of those younger, and perhaps older, readers in VK3 have been waiting for.

For the purpose of instituting an S.W.L. Group in N.S.W. a meeting was to be held at the T.V. Studio of the School of Electronics and Communications, Gore Hill Technical College, on Monday, 14th April. As yet we have no news of the result of this meeting, but it is to be hoped that all the VK3ites rallied round and provided a good turn up. A copy of a circular kindly forwarded by the Hon. J. D. 2AL3, Secretary of the VK3 Division, indicates that formation of the Group will run along the following general lines:

An S.W.L. Group member will enrol as an associate member of the Division at an annual fee of 25/-s. A financial member of the W.I.A. at the present time may become an S.W.L. merely by registering and obtaining an L-number.

As an associate member, he is then entitled to receive a monthly Bulletin and a copy of the Institute magazine, "Amateur Radio." He may attend all normal W.I.A. meetings and activities as an associate, but may not vote.

He may apply for and receive letters of dispassion equipment with club W.I.A. members as outlined in the Bulletin, and he may obtain and wear the W.I.A. Lapel Badge.

So there you are VK3 S.W.L.s! At this stage the success of the new Silver-Grey VK3 group is in your hands. I hope you will respond to the opportunity provided by your Division and make the results good about May. If any of you are interested in this Group drop a line to the Secretary, Wireless Institute of Australia, New South Wales Division, P.O. Box 1734, G.P.O. Sydney.

We sure hope to hear a great deal of the S.W.L. activities in VK3 from now on.

VK3 S.W.L. GROUP

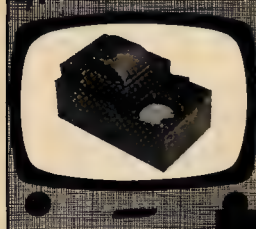
At the March meeting of the Group we really enjoyed ourselves. The meeting took the form of a Question Night, the questions ranging from relatively hard ones for members of the Group who are known to be engaged in study for the A.O.C.F. examinations, to tricky ones for the unwary. Several members were handed a sealed envelope a few minutes before they were required to speak and were requested to answer the question contained in the envelope. After the answer was given to the best of the ability of the person concerned the meeting was free to question him further. Great fun was had by all and I think everybody learned a little more about Radio.

As Eester has intervened this month, there has been little or no contact between myself and other Group members. However, I have been able to glean the following information about members. Alister Siebking has just driven home from a visit to Deniliquin, having had several adventures on the road going there and back. He has been visiting Ned, ex-3ANS, now 3OU, who was previously one of the Group representatives with the VK3 Council. We wish Ned all the best in his new surroundings. Maurice Cox is believed to have visited VK3 during the Easter period, but we have heard no further of him. Our President, Len Ponting, now has his 8 m. x 6 ft. performing well and has been busily sorting out the JA station on that band. We wish him luck in his DXing on the 1.8, 3.5 and 7 bands.

The Group wishes to pass sincere congratulations to our recent host and hostess, Ron and

(Continued on Page 26)

Now! A & R Voltage Adjuster



An Essential Instrument for the T.V. Serviceman

With the increasing number of Television Receivers now being installed, the demands made upon the T.V. serviceman's time will increase steadily.

In certain areas reception difficulties often occur due to low supply voltage, and it is certain that some ready means of detecting this condition would assist the serviceman, and perhaps save valuable time in endeavouring to locate a suspected fault within the receiver. With the above in mind, A & R have available the T.V. Voltage Adjuster as Illustrated. Soundly constructed and finished in attractive Silver-Grey Hammer-tone, this A & R product provides the serviceman with an invaluable, yet inexpensive, addition to his equipment.

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-Continued from Page 18)

Robertson, of Port Albert, who in his travels was looking for some s.w.l. gear suitable for mobile operation. Ken said he would be down again in the near future, so we'll be very pleased to see him. Another person expected to visit Melbourne within the next few days is Arthur B. Smith, who has ordered the last of his visitation of ODM. Very nice contacts during the course of the evening. We hope he enjoys his visit to the big smoke also.

Yours truly has now erected a WJJK beam for 21 Mc. and is very pleased with it as it has improved reception on that band by at least 3-4 S. points. The beam is rotary and about 30 ft. high.

NEW FEATURE

Some time ago I began a section in these notes entitled S.W.I. of the Month. This took the form of details of any S.W.I. who would

like to provide them, such as other activities, hobbies, etc., details of equipment used, age, employment and any special achievements worthy of mention. However, this feature fell through due to lack of support. I am willing to include this feature again if you are interested, so if you are, what about providing some information about yourself, whoever you may be?

I have been thinking about starting a "Help Wanted" section, similar to that in the American magazine "CQ". If you require help in your activities let me know and I will publish your name, address and telephone number in these notes in the hope that someone may contact you with an offer of assistance. Don't forget to let me know what type of assistance you need though.

Well that pretty well winds it up for this month. Here's hoping for plenty of news in the future and an increased interest in this column. Now back to that rx to see if I can catch up with Eric Treb.

THE NEW ISSUE OF THE CALL BOOK WILL BE AVAILABLE IN JUNE—WATCH FOR IT!

HAM CHATTER

The occasion was a meeting of the School Parents and Friends' Association. It was being held in the evening, at the home of the President, in the hope of attracting a few fathers as well as the faithful mothers.

Alas--only two fathers braved the occasion (one the President's husband), and both were Hamal.

The meeting dragged on, wandering off along too many cross-trails of thought and masculine interest lagged. Soon a murmur of deep voices was heard, rising gradually but steadily to a level at which all could distinguish the rap in cryptic discussion of "condensers" and "impedance" and "Q" and "S.W.R."

Is there anything as bad as a Ham for complete single-minded absorption in a topic? It's the same at a social gathering, be there more than one Ham present, in no time they are huddled in a corner, oblivious of their surroundings and solemnly intoning their cabalistic litany.

Extract from Sydney "Bulletin."

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D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Car. C't-	Call	Car. C't-
	No. rises		No. rises
VK3WL	14 211	VK3EE	10 169
VK3ATN	20 204	VK3DB	21 161
VK4PJ	21 202	VK4WF	16 160
VK4RU	3 194	VK4RW	22 167
VK4HR	12 193	VK3JD	1 153
VK3BZ	3 178	VK4KS	9 153

C.W.

Call	Car. Cnt- No. rises	Call	Car. Cnt- No. rises
VK1KB	10 235	VK3XU	45 212
VK4PJ	29 234	VK3BY	45 202
VK3FH	15 225	VK1EO	2 191
VK3CX	36 223	VK3YL	29 190
VK3BZ	6 222	VK3RU	15 177
VK6HR	8 218	VK6RX	23 175

Appendix

VKPCK 41 184

OPEN

Call	Cer. C'tnt- No. rics	Call	Cer. C'tnt- No. rics
VK1ACK	6 250	VK1XU	41 221
VK1PJ	22 238	VK1JE	12 219
VK1HR	7 233	VK1ATN	69 210
VK1BZ	4 231	VK1HG	3 201
VK1WL	45 225	VK1NS	14 195
VK1RU	8 224	VK1DB	59 183

Appendix

VK0XK	04	158	VK4BG	08	158
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New Members

VK1AFA	70	302
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Russ VK4K, Port Moresby 5011 mcs, felt the urge to try 50 Mc again on March 31 at 2130, so switched on the receiver but found it dead, 30 minutes work on it and it came to life. The first signal was from JASR on the 5. The panic started to switch on the tx. Fortunately it worked, so Russ frantically called CQ even though the beam was still on the 5. The 50 Mc beam was off. "On changing over was anxious to hear a lovely m.c.w. sig calling me and signing KISSP" An excellent contact resulted with the 50 Mc beam on 50.1 Mc. The 50 Mc beam is a 8 el. beam. When he went over to phone he remained 57, 35" Russ then untied his beam and swung it north to round off the night with the 50 Mc beam. The 50 Mc beam was on the 50.1 Mc. The J.A. GRM Russ could hear Aussie voices, but the only one he thought he identified was KXGO calling him. The 50 Mc beam was contacted the south each evening at 2130, immediately after the A.B.C. news session. Bill 625W, Rabaul, 52.54 Mc is now active with 50 Mc. The 50 Mc beam is on the 50.1 Mc. He should have been well into the DX by now, and is also looking for VK contacts.

As a parting thought, Vern 6LK reports that some of the JA stations are listed in a copy of a Japanese "CQ" as having worked 27 countries.

**V.H.F. CORRESPONDENTS
PLEASE NOTE**

50 Mc.—New stations on the band include Bert 3KX, Sam 3KC (where have you been Sam?), and Tim 2AYZ. SATN Birchip, 3ZCW Ouyen and 3NN at Yanac are also active and have been working into JA. Lindsey 3ZEW, who was operating fixed portable in Melf, for a time, is now back in Hopetoun and is running 15w. to a 12ES feeding into a 3 el. beam. He operates on either of 50.04 or 50.23 Mc.

Duke has not been keenest to compete next time. The route traversed was Stradley Park, where he had been before, and he did not know the time the fox went with Tom SAOG and Norm SZBU who were all parked in an elevated position, overlooking the road. He did not see the fox following over the same track about four times. He could not find the entrance to the car park, which was a disappointment as he had seen it. The latter had tried to speak away. The fox also had the pleasure of seeing Maurice RMS enter the car park. He saw him go down the stairs entering. The final location was at the home of George JWJ and his XYL Joan Joan went to the front door to see if she could get the foxes who were enjoyed by all present. Many thanks Joan and George. Tom SAOG was the first to leave for the car park. The fox was seen per-up.

The next Fox Hunt will be held on 18th May, and Norm SZBU will be the fox on

SOUTH AUSTRALIA

Of course all of this does not put the JA position right out of court because the band in that direction has been opening regularly and reported by Hughie SBC as being useable for 23 consecutive days in March. Keith SMT worked a JA every three minutes after 2100 hours on the 21st and according to latest information Col SRO has scored 53 JA contacts (from 48 different call signs), with Keith SMT having 51 contacts (41 different stations). Very

good going fellows and congrats from us also fans.

By the way, did you hear how Col SRO sometimes makes the grade? He has his junior op. monitor the band and when he hears em, calls you to come in and work em. Not bad and from all accounts it is successful too, because he has worked all JA districts on 5 mhz.

During the month Bill SZAX and George SOB went over to the Peninsula to Bill's country seat and set about starting a QTH necessary for v.h.f. working from that location. The 240v was installed and some test transmissions done on both 3 and 5, the signal being copied on the mainland quite well and as far ahead as Hughes 5BC, and on one occasion they contacted Z2AL so we are hoping to hear a lot from that "ideal" and noise free location as he gets things all ship-shape. From all reports, it will be a Ham's dream show.

Keth SM7 has done some audio modifications on his rig and comes up with a very strong signal now as a result of such changes. It sounds really good, too, the restriction having been carried out without much change to the usual audio we hear from him. George SOB in his "inimitable" way was heard to report that in spite of numerous "bad" power Jones and inexplicable technical difficulties, he considered the new audio to be as good as he had heard, so there you are Keth, it must be good.

A new contact for this QTH recently was Graham SZAP, who on 5 mhz was putting in quite a signal 8 x 5 p.m. He is using a 6V6 triode to a 4V8 double to an 800 ohm (18 watts) into a 4 at beam 45 ft. high. His rx being a crystal front end, GACI, 8ACI, 636, 8ACI, 1A, and comes up with a very strong set-up to receive 3 but no tx as yet. Mod. one on 1 completes the picture there. Graham has had a taste of JA and all is well there.

South East boys report that some 3 mhz activity has been experienced there. CM, 801, apart from working quite a number of regular VKs added several new SBL and SBL collection. As also did Leo SZAG, one being a contact with 7LZ.

Claude 8CH is at present completing the construction of a 3 mhz final using an 809B. Expects to turn an input of 80w, which should give him a mighty signal, and make his presence heard on the band under conditions are OK for DX.

Associate member, Don Pitt, has recently filled in the necessary forms to obtain his L.A.O.C.P. and he expects it any day now. Congrats, Don, we look forward to hearing you on the band.

Dave 8AW has been busy constructing and matching up a new long yagi for 2 mhz. Made himself a s.w.r. bridge and is getting things just right. Dave is also active on 5 and has made some nice contacts on that band.

Advice received that ZERKE is heading to VKS Saturday, 14th of December time and looking for contacts. Who will make it first?—8EP.

WESTERN AUSTRALIA

50 Mc—JAS hit the West with good sign early in March and have been in and out ever since. The opening occurred during a very hot spell with the temperature at 100 degrees. Bob 68Z, on long service leave, has worked JAS fairly consistently, contacts number around the 50 mark. All the active VKs have worked the DX. These are 68G, 68B, 68ZB, 68ZG and 68ZAV. Also wally 6WC who we heard being called by the Japs. We are hoping for contacts to emanate from VS and ZE. Who knows?

144 Mc.—Zan 8CL has got going on 2 and was heard in Perth by 8BO and 8ZAV on his tripler, running about 1w. into a long yagi—a distance of approx. 148 miles. 8ZAV has had good contacts cross-band with Jan, 144-4 Mc. The 8CL was with 1w. into a long yagi. 8ZB was not so hot, conditions were not good, sigs. were only 4/5, but the next night Jan worked 8BO and 8ZAV with 5/8 sigs, which had to be heard to be believed.

The last Qx Hunt on 144 Mc on March 15 turned out to be a mobile one. Frank 6CC was the fox and he led the boys a bit of a dance. Don 8BT was first in, followed by Rob 8BO Supper at Frank's QTH followed, winding up another enjoyable evening.

The March V.H.f. Group meeting was held on Monday night the 24th with quite a good attendance. Jack 8ZBU was in the chair. Many ideas were brought up and discussed to improve the membership and general interest in the Group's activities. The talk for the evening was given by Bob 68B on his impression of 80 Mc operation and conditions, and conclusions drawn by him since he became interested in the band. This was followed by tape recordings of signals heard on the band, including JAS, etc. Many thanks Bob, it was very interesting.—8ZAV.

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3/4"	24/6	1-3/4"	57/6
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XVLS AND HARMONICS

Amateur Radio enthusiasts come in for little publicity or general comment, except of course when disaster strikes and their voluntary manning of emergency communications services is widely and deservedly commended. But if the self-styled Hams are little enough known, the VLS and Harmonics are, I claim, downright neglected!

Who are these strange creatures of such exotic titles? XVLS are the long-suffering wives of Hams, their name being derived by rather cruel if ingenious reasoning from the abbreviation YL, used for "young lady" in Morse Code transmissions. A Ham's wife is therefore his ex-young lady: VLI.

Harmonics, then, you will rightly deduce, are a Ham's children, home come they by their names! Technically, a harmonic is a subsidiary signal during transmission of radio waves; an offshoot of the main frequency. What more logical than then to call the children, the "offshoots" of the Ham himself, Harmonics?

If this seems complex, you may thank your lucky stars if you're not an YL for it is nothing compared with the other strange goings-on of a Ham household. A part of the house, varying in size with the particular Ham's degree of enthusiasm and of tidiness (and the latter seems strangely under-developed, even in otherwise tidy men), is given over to a miscellany of radio gear: trailing wires, coils, switches, valves, resistors, condensers, to say nothing of at least one transmitter and about wave receiver. The last may be a commercial set, or one lovingly built by the Ham himself—in other words, a "home-brew".

This sacred area, be it a corner of the verandah, an old shed in the backyard, or (in the case of unusually patient XVLS) portion of the festively-furnished lounge, is invariably called the "shack." (Even our two-year-old has learnt to announce his father's disappearance into the wireless room here given over to the hobby with "Daddy's in 'e shack.") Once the door has shut, it is of little use going in, though the domestic heavens may fall. One's greeting will be either the vague grunt of one fully occupied with the delight of constructing some new electronic horror; or the tactless look of one deep in calculation of the inductance of the latest coil,

taking into account the number of turns of wire, distance between the turns, etc., etc., and involving frequent reference to logarithm tables of forbidding aspect; or alternatively, imperious gestures for silence, while out of the receiver or into the microphone pours some such jargon as "Your report is 5 and 8. Receive your handle OK, the handover being John—Jig, Obce, How, Nan. I will be pleased to QSL you and look forward to another pleasant QSO. TX, Old Man! VK2XYX to transmit, VK2XYX in over and clear." And they will remain happily in the shack listening to the kind of thing for hours! When the DX overcast—station after station blaring loud and clear the XYL gives up all hopes of father's appearance at the meal-table and resignedly carries his serving into the kitchen. At any time she may be forbidden to continue with much-needed family sewing if it so happens that her machine produces the slightest amount of electrical noise!

So much for the devil side—for it must be admitted in all fairness that even for the credit side of the ledger. We have recently moved interstate, and have had a lot of pleasure keeping in touch with Ham friends in our former home town and hearing the latest news as soon as the residents do. Many are the friendships made, in Australia and overseas, with Hams and XYLs one has never seen. Yet, XVLS are sometimes permitted to speak, though it is to be noted that a Ham who has no difficulty in making a QSO—a radio conversation, that is—for one hour or even more, will trot out the threadbare fairy tale about how much home can talk even after only a few widely sentences! Harmonics, too, if well-behaved, are permitted to greet those of distant Hams.

The hobby is a complete relaxation for men who, like my husband, lead a busy and exciting professional life—and, as many an XYL has been heard to say, it's a hobby that keeps them at home under the wispy eye! There is a happy spirit of freemasonry among the Hams. Certain names only are used, termed "handles" and the Australian radio mechanic, say, with his home transmitter, chats happily on an equal footing with the high-ranking diplomat at the American Embassy in Ecuador.


No matter when or in what circumstances a Ham visits another—on a holiday trip, maybe—he and his family are assured of a real welcome, wholehearted hospitality, and any assistance that may perhaps be needed. To many, for instance the Americans and their wives stationed on Pacific islands, Ham Radio is an absorbing interest and a means of abolishing monotony.

And, finally, it is the most vivid, most personal, most satisfying way, short of travel itself, which is not possible for all of us, of obtaining a living glimpse into the life of those to whose land we are so drawn.

(The foregoing was supplied by Mrs. Lesley Fullager, XYL of VK2AFY, and comprised the basis of a broadcast over the A.B.C. Women's Session some time ago.)

PREDICTION CHART, MAY '58

E. AUSTRALIA — W. EUROPE S.M. Mo.													Mo.
0	3	4	6	8	10	12	14	16	18	20	22	24	
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E. AUSTRALIA — FAR EAST													
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5F	..	£2/2/0	12-O	..	£2/0/0
5FX	..	£2/3/0	12-O De Luxe	..	£2/0/0
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2 x 6 x 3	24/10
3 x 3 x 1	15/7
3 x 3 x 2	17/10
3 x 3 x 3	24/10
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4 x 4 x 2	24/10
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